

RST®-II Assembly Instructions

For Field Assembly of the Xerxes RST-II Septic Tank Components

1. GENERAL

1.1. Read and study these assembly instructions in full before beginning assembly.

1.2. For your protection, wear the proper personal protective equipment (PPE) while on the job.

1.2.1. Wear leather gloves whenever handling FRP parts.

1.2.2. Always wear safety glasses with side shields while at the construction site.

1.2.3. Wear safety goggles if there is a chance that dust from grinding or cutting could blow around your safety glasses and into your eyes.

1.2.4. Wear hearing protection when using pneumatic or electric tools that produce noise levels in excess of 85 dba.

1.2.5. Wear an approved hardhat if there are overhead hazards such as crane hooks.

1.3. Whenever using hazardous chemicals, obtain a Material Safety Data Sheet (MSDS) for each product and follow all safety requirements.

1.4. Comply with all applicable regulations and standards, including federal, state and local construction, safety, health and environmental codes.

1.5. No instruction or procedure presented in this manual should be interpreted as to put any person's health or safety at risk or to harm any property or the environment.

1.6. The RST-II can be configured in a number of ways. This includes with or without a baffle, piping, and openings/non-openings for accessories or filters. Therefore, it is imperative that a print showing the final configuration is obtained and studied before beginning assembly.

2. TOOLS

2.1. To assemble the RST, you need the following items:

- rope/straps – 250-pound working capacity minimum
- backhoe/crane/hoist
- industrial grinder with 24-36 grit pads
- tape measure
- methacrylate adhesive
- adhesive applicator gun (One supplier is FRP Supply. To contact FRP Supply east of the Rockies call 1-888-287-8178, west of the Rockies call 1-800-555-5899.)
- sawz-all
- 5-inch hole saw with the appropriate drill to power it
- lubricant (soap)
- 6-inch C clamps – 46-48 per assembly station
- PVC primer and medium-bodied PVC cement (www.ispcorp.com)

3. HANDLING

3.1. Use lifting lugs when moving parts.

3.2. The half-shells may be stored in stacks not to exceed 16 half-shells per stack. Do not drop or force one down on the other.

3.3. For a working area you will need enough room for both halves and the baffle (if used). The surface should be level, and the environment should be dry and warm (between 60° and 85°F).

3.4. The storage area should be free of rocks and sharp objects.

3.5. Hookup ropes should be 5/8-inch rope with a minimum working capacity of 250 pounds. Slings or straps may be used if an appropriate end connecting to the lifting lug is fabricated to spread the stresses in the lug.

3.5.1. Check the condition of the hookup ropes before each lift, looking for fraying, cuts or anything else that could reduce the working capacity of each rope to below 250 pounds.

3.5.2. Use four equal lengths of rope about 10 feet long. (See FIGURE 3-1.)

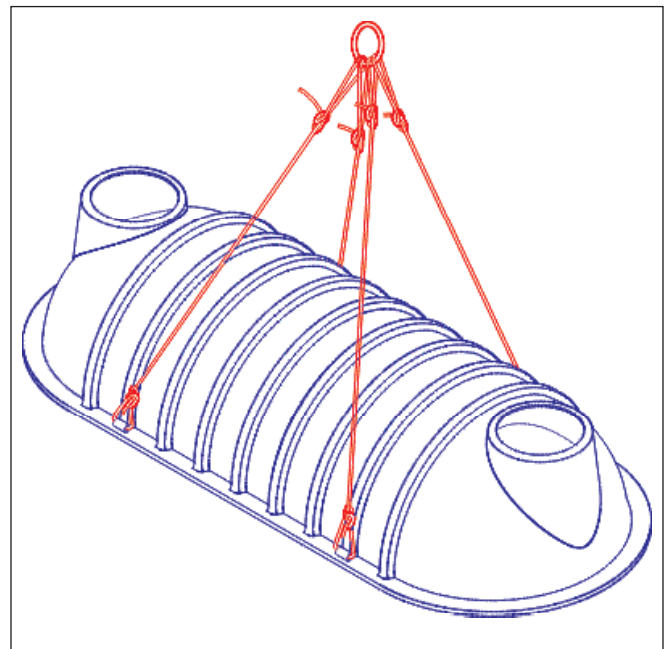


FIGURE 3-1

3.5.3. Tie each rope to a D-ring (minimum working capacity of 1000 pounds) that can be used for hoisting.

3.5.4. Thread each rope through the lifting lug and tie with an easily removable knot that will hold the load, such as three half hitches or a bowline.

3.5.5. When lifting, lift smoothly. Do not jerk or bounce the shell(s)



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while lifting. (See FIGURE 3-2.)

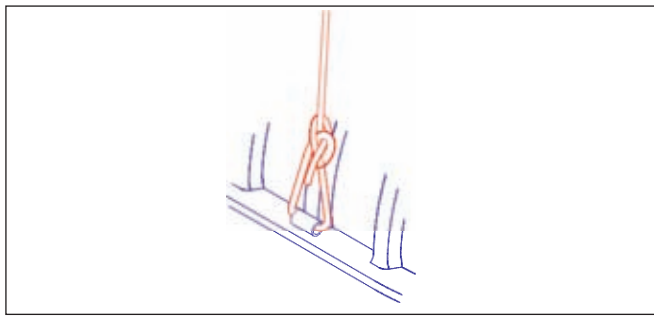


FIGURE 3-2

3.5.6. Never lift more than four half-shells per lift. (See FIGURE 3-3.)

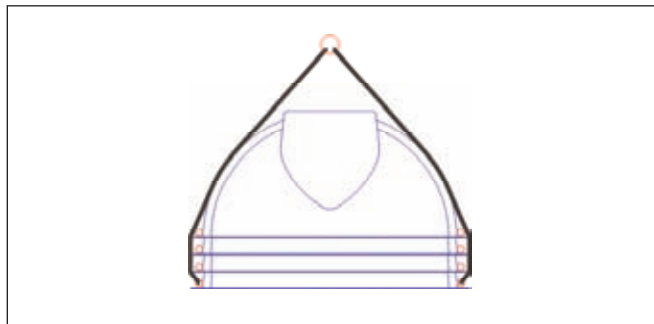


FIGURE 3-3

4. LAYOUT, DRILLING AND CUTTING

- 4.1. Determine the top half from the bottom half. The top has labels on it and the bottom does not.
- 4.2. From the prints, determine inlet and outlet positions.
- 4.3. The center for a 4-inch pipe is two inches above the invert. Therefore, if the drawing shows piping at the invert, the center of the opening needs to be two inches higher than the dimension given.
- 4.4. Start the pilot hole at the marked center.
- 4.5. Drill a 5-inch hole for a 4-inch PVC pipe and grommet. If the sizes being used are different, determine the hole-saw size needed before drilling.
- 4.6. After drilling, lightly sand if burrs or protrusions are present.

5. PIPING

- 5.1. Assemble the piping.
 - 5.1.1. From the plans, lay out the piping needed.
 - 5.1.2. Dry-assemble the piping the first time to familiarize yourself with the piping configuration.
 - 5.1.3. Assemble piping with primer and cement per the manufacturer's recommendations.
- 5.2. Install the grommet.
 - 5.2.1. Inside the grommet, there are two sealing bars that seal between the piping and the grommet. The pipe can only be installed in one direction. Determine the direction of the grommet so the pipe can be installed correctly. (See FIGURE 5-1.)

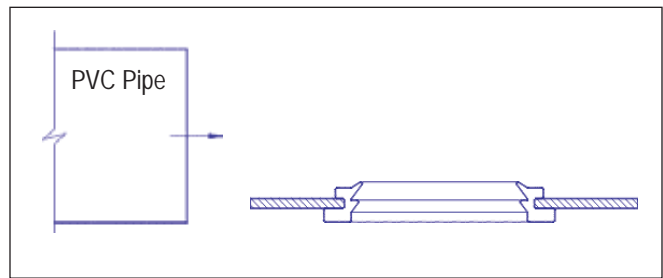


FIGURE 5-1

- 5.2.2. The grommet also has two flanges on the outside, one large and one small.
- 5.2.3. Lightly lubricate the inside of the grommet with lubricant.
- 5.2.4. Carefully push the pipe through the grommet until the pipe is properly situated according to the print.

6. SURFACE PREPARATION

- 6.1. The area that needs to be bonded together must be properly prepared.
 - 6.1.1. Make sure all surfaces are dry.
 - 6.1.2. Remove any dirt, grease or other foreign matter.
 - 6.1.3. Protect all grinding surfaces from water, dirt, oil or other foreign matter until bonding is complete.
 - 6.1.4. With a professional-grade grinder and a 24-36 grit sanding disk, grind the bonding surfaces until there is no shine and the surface looks white. The top half needs to be upside down for grinding.
 - 6.1.5. For the bonding flanges, on the top and bottom shell, grind the total surface of the flange from side to side and all the way around the tank. (See FIGURE 6-1 and FIGURE 6-2.)

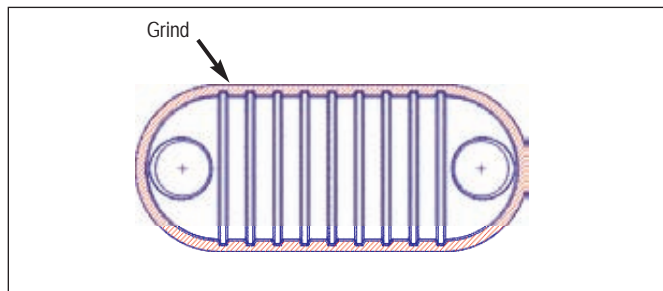


FIGURE 6-1

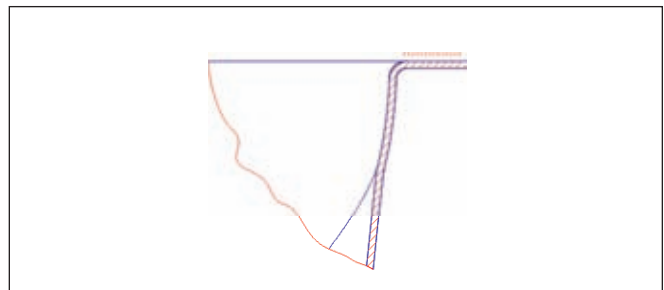


FIGURE 6-2

- 6.1.6. If installing a baffle (optional), determine at which rib the baffle will be installed.
- 6.1.7. On the inside bottom section of the tank half, grind the bottom of the rib cavity inside the tank. (See FIGURE 6-3.)

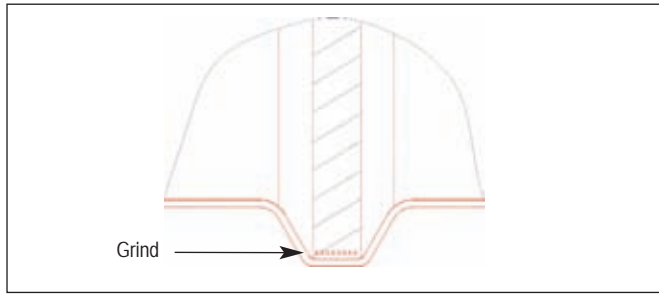


FIGURE 6-3

6.1.8. Grind the bottom half (180°) of the baffle, the flange. (See FIGURE 6-4.)

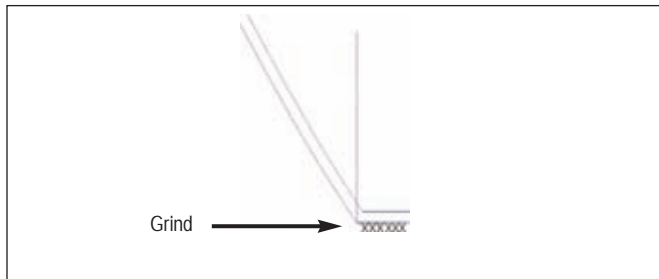


FIGURE 6-4

7. BONDING THE SHELL

7.1. Setup

7.1.1. Bonding should be completed within 4 hours of surface preparation (grinding).

7.1.2. Bonding the shell together is a time sensitive operation. Once the adhesive application has begun, there is a 30- to 40-minute window of working time at 75°F (length of working time is from when the adhesive is mixed to when the adhesive starts to cure and is temperature and humidity dependent). Therefore, it is important that all work and material is laid out in advance and ready for use.

7.1.3. The adhesive has a shelf life of six months, based on steady state storage between 50°F and 80°F (Verify that the shelf life has not been exceeded.) Storage above 80°F will result in a reduction in the stated shelf life. The product should not be stored at temperatures below 32°F. Shelf life can be prolonged by storage below 50°F. The viscosity of the adhesive will decrease with increased temperatures, resulting in quicker dispensing from the cartridge. Adhesive at 50°F will be more stiff and slower to dispense than adhesive at 75°F.

7.1.4. The flange of the top half of the assembly should be ground and protected from contamination. All piping and holes should have been completed at this time.

7.1.5. The flange of the bottom half of the assembly should be ground and protected from contamination after grinding.

7.1.6 If a baffle is to be used, all holes and piping should have been completed along with surface preparation on the bottom half.

7.1.7. The bottom should be located in a work area that has ample access from all directions for adhesive application and clamping.

7.1.8. A lifting device is necessary to assemble the top over the bottom. Both halves need to be positioned so that this can be done in an efficient manner in the time allotted.

7.1.9. The clamps and other equipment should be situated within easy reach.

7.1.10. After checking all of the above, assembly of the shells can begin.

7.2. Adhesive Application

7.2.1. If using a baffle (optional), place the baffle in the bottom half, two ribs away from the actual final position in which it will sit. From the prints, determine the correct direction and location of the baffle.

7.2.2. Set up the adhesive gun per the manufacturer's recommendations.

7.2.3. Lay out the adhesive cartridges. See TABLE 7-1 to determine how many cartridges you will need.

Tank Size or Optional Accessory	Number of Cartridges
1,000-gallon tank	4
1,500-gallon tank	5
Baffle	1 (in addition to above number)

TABLE 7-1

7.2.4. When starting a new cartridge, always run a bead (two to three inches in length) on scrap cardboard until the adhesive comes out of the mixer thoroughly blended. This can be determined by consistent color throughout the bead. (See FIGURE 7-1.)

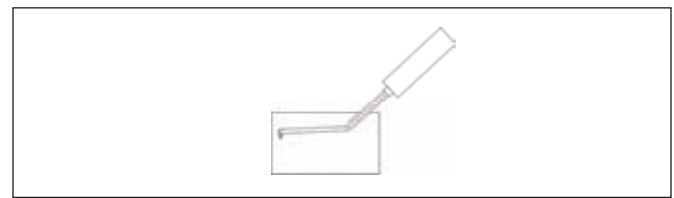


FIGURE 7-1

7.2.5. Begin with the baffle (if applicable) by applying a bead at the bottom of the tank in the middle of the rib cavity in which the baffle will be bonded and work your way up one side at a time. The bead should be about 3/4-inch diameter and the entire cartridge should be used.

7.2.6. Move the baffle to the designated rib, taking care that the holes and piping line up per the print.

7.2.7. On the bottom-half flange, begin applying adhesive by making a 3/4-inch bead in the middle of the flange at the edge of the dome, and work your way around the perimeter. (See FIGURE 7-2.)

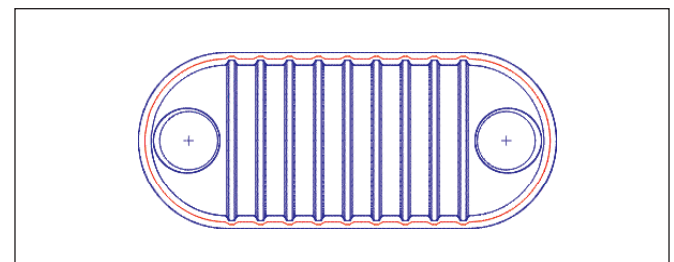


FIGURE 7-2

7.2.8. At ribs, stay in the middle of the flange – this will cause a repeating pattern. (See FIGURE 7-3.)

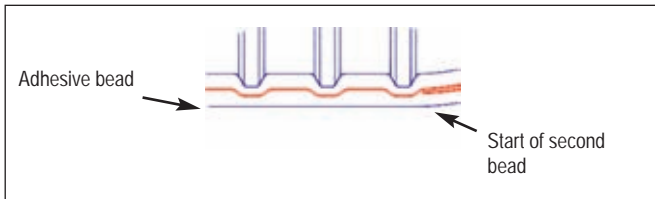


FIGURE 7-3

7.2.9. When the entire flange has been beaded but not all of the adhesive allotted for the tank has been used, continue applying adhesive by adding additional beads in the dome area. (See FIGURE 7-4.)

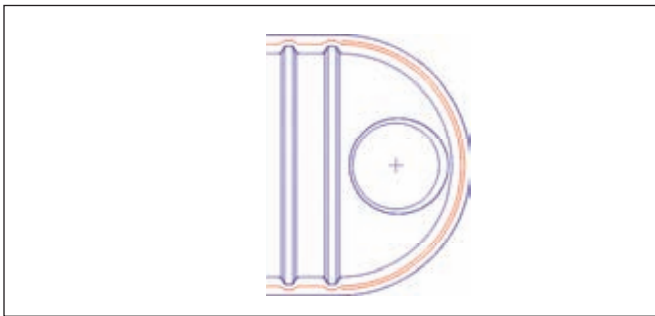


FIGURE 7-4

7.2.10. Do not leave gaps between multiple beads as this could result in air pockets. (See FIGURE 7-5.)

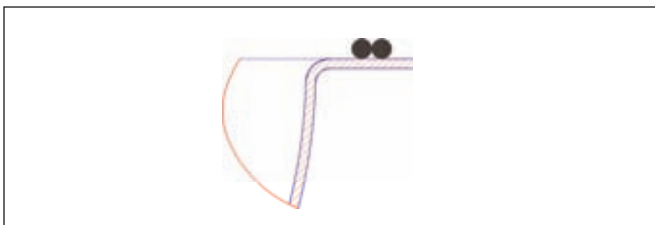


FIGURE 7-5

7.3. Clamping

7.3.1. Using a hoist and ropes, lift and turn over the top half and position it over the bottom half.

7.3.2. The flange should evenly line up all the way around the tank. (See FIGURE 7-6.)

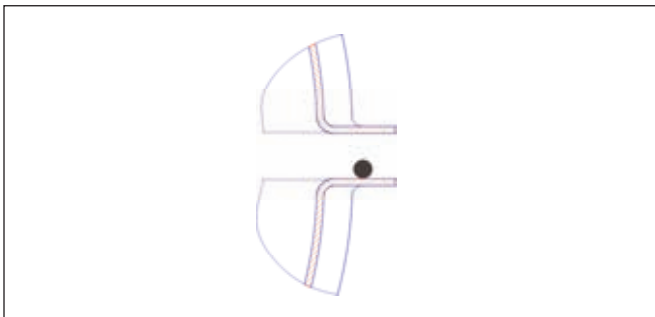


FIGURE 7-6

7.3.3. Lower the top half onto the bottom half.

7.3.4. After setting, use one clamp at each end to hold the top in place.

7.3.5. Begin placing clamps at 6-inch to 8-inch intervals on the dome (11 to 12 clamps per dome) and one clamp between each rib. (See FIGURE 7-7.)

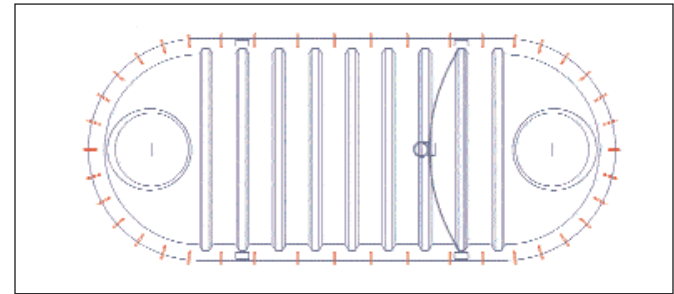


FIGURE 7-7

7.3.6. Gently tighten the clamps until the adhesive flows to just the outside of the flange. DO NOT OVER TIGHTEN. (See FIGURE 7-8.)

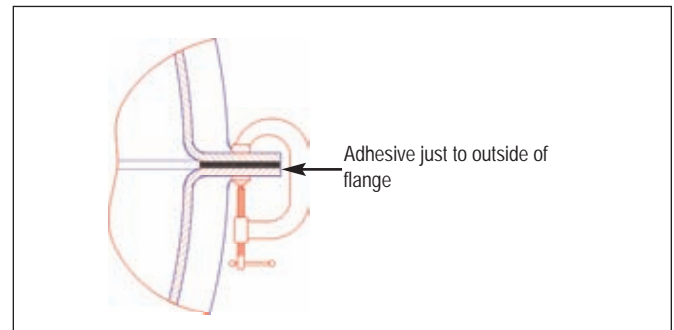


FIGURE 7-8

7.3.7. Continue this until there are clamps around the entire perimeter.

7.3.8. Check to make sure the adhesive is to the edge of the flange all the way around.

Note: Do not tighten the clamps to the point at which the adhesive flows out of the flange.

7.3.9. After clamping, let the tank sit for at least two hours before removing the clamps or moving the tank.

7.3.10. If testing is required, allow the tank to set for at least eight hours before testing.

7.3.11. Follow Xerxes' RST-II Installation Instructions to install the tank.